NorCal Engineering

Soils and Geotechnical Consultants
10641 Humbolt Street Los Alamitos, CA 90720
(562)799-9469 FAX (562)799-9459

July 10, 1997 Project Number 5936-96

Mc Donnell Douglas Realty Company
4060 Lakewood Boulevard
Lakewood, California

Attn: Mr.Johnny Marasco

RE: **Observation and Testing of Rough Grading Operations** - Excavation Backfill - Former Mc Donnell Douglas Facility - Located at the Southwest Corner of 190th Street and Normandie Avenue, in the City of Los Angeles, California

Dear Mr.Marasco:

Pursuant to your request, this firm has observed and tested rough grading operations at the above referenced site. Results of the compaction tests are attached and locations of these tests are shown on the accompanying Site Plan. All work was performed in accordance with the City of Los Angeles Grading Code and all present day standards of the Geotechnical Engineering Industry

Site Grading

All vegetation and demolition debris was stripped and removed from the fill areas prior to grading operations. The existing low density soils were removed to competent native soils, and/or to existing concrete subterranean structures. The exposed subgrade was scarified, moisture conditioned and then recompacted to a minimum of 90% relative compaction. All excavations were observed and approved by this firm prior to placement of fill material.

The in-place abandonment of the concrete structures and caissons was performed with the approval of the City of Los Angeles Grading Officials. These structures were located 4 to 5 feet below grade. Final grading and building plans for future developments shall be reviewed by the soils engineer in order to provide additional recommendations as deemed necessary. Prior to development, complete subsurface investigation shall be completed by the soils engineer in order to provide design parameters for proposed improvements.

Backfill Operations

The fill areas consisted of five excavations with a maximum depth of 8 feet below ground surface. The limits of the excavations are shown on the attached plan. Excavation 13 was left ± 3 feet below existing grade; excavations 2, 4 and A were left about 1 foot below existing adjacent grades. Trench backfill areas are also shown on the plan; these trenches were created during site environmental activities. Maximum depth of fill placed in trenches was 3 feet.

Fill soils placed were compacted to a minimum of 90% of the laboratory standard in lifts not in excess of eight inches in thickness. Conventional grading and compaction equipment was utilized for compaction control. A water truck provided moisture control.

Laboratory/Field Testing

The relative compaction was determined by Sand Cone Method (ASTM: D-1556-82) and by the Drive Tube Method (ASTM: D-2937). The maximum density of the fill soils was obtained by the laboratory standard (ASTM: D-1557-78) and results are shown on Table I. Tests were performed a minimum of every 500 cubic yards placed and every two feet in depth of fill placed. Results of the field density tests are presented in Table II.

Conclusions

The geotechnical engineering aspects of the backfill operations have been observed and are in compliance with the geotechnical engineer's recommendations. The backfill currently meets secondary fill requirements for support of pavement and floor slab. The excavations have been backfilled to the approval of this firm and are suitable for their intended use.

We appreciate this opportunity to be of service to you. If you have any further questions, please do not hesitate to contact the undersigned.

Respectfully submitted,
NORCAL ENGINEERING

Keith D. Tucker
Project Engineer
R.G.E. 841

REGISTERED PROFESSIONAL ENGINEER
KEITH D. TUCKER
No. 841
Exp. 12/31/00
GEOTECHNICAL
STATE OF CALIFORNIA

Mark Burkholder
Project Manager

TABLE I
MAXIMUM DENSITY TESTS
(ASTM: D-1557-78)

Soil Type	Classification	Optimum Moisture	Maximum Dry Density (lbs./cu.ft.)
I	Silty, Clay	14.0	110.0
II	Silty, Clay,	13.0	112.0
III	Clayey, Silt	12.0	121.0
IV	SAND, fine to medium grained, slightly silty, slightly clayey, occasional gravel and rock	10.0	128.0

TABLE II
COMPACTION TEST RESULTS

Date of Test	Test No.	Depth*	Percent Moisture	Unit Wt. lbs./cu.ft.	Relative Compaction	Soil Type
5/21/97	101	8.0-8.5	18.5	102.9	93	I
5/21/97	102	8.0-8.5	113.9	108.8	98	I
5/21/97	103	6.0-6.5	13.4	118.2	97	III
5/21/97	104	6.0-6.5	10.2	114.3	94	III
5/21/97	105	6.0-6.5	14.0	120.2	99	III
5/22/97	106	5.0-5.5	9.8	119.3	98	III
5/22/97	107	5.0-5.5	13.0	116.1	95	III
5/22/97	108	5.0-5.5	13.3	114.7	95	III
5/22/97	109	5.0-5.5	13.6	112.7	93	III
5/22/97	110	4.0-4.5	14.4	116.3	96	III
5/22/97	111	4.0-4.5	16.3	116.9	96	III
5/22/97	112	4.0-4.5	15.4	116.1	95	III
5/22/97	113	4.0-4.5	11.3	118.0	97	III
5/22/97	114	3.0-3.5	13.2	115.9	95	III
5/23/97	115	3.0-3.5	12.2	118.5	97	III
5/23/97	116	3.0-3.5	12.8	118.8	97	III

* Depth below finish grade (in feet)

**Retest of failing tests after area reworked

TABLE II
COMPACTION TEST RESULTS

Date of Test	Test No.	Depth*	Percent Moisture	Unit Wt. lbs./cu.ft.	Relative Compaction	Soil Type
5/23/97	117	3.0-3.5	13.4	120.8	99	III
5/23/97	118	3.0-3.5	13.1	115.8	95	III
5/27/97	119	2.0-2.5	13.4	118.2	97	III
5/27/97	120	2.0-2.5	13.1	114.9	94	III
5/28/97	121	3.0-3.5	13.8	118.6	98	III
5/28/97	122	2.0-2.5	12.1	111.5	92	III
5/29/97	123	4.0-4.5	13.7	117.9	97	III
5/30/97	124	3.0-3.5	12.6	119.4	98	III
5/30/97	125	1.0-1.5	13.2	113.1	93	III
5/30/97	126	1.0-1.5	12.9	116.9	96	III
5/30/97	127	1.0-1.5	13.0	115.0	95	III
5/30/97	128	1.0-1.5	13.0	115.9	96	III
5/30/97	129	3.0-3.5	14.0	114.9	94	III
6/25/97	130	3.0-3.5	15.5	115	95	III
6/25/97	131	3.0-3.5	14.2	115.5	95	III
6/25/97	132	3.0-3.5	11.0	113.5	93	III

* Depth below finish grade (in feet)

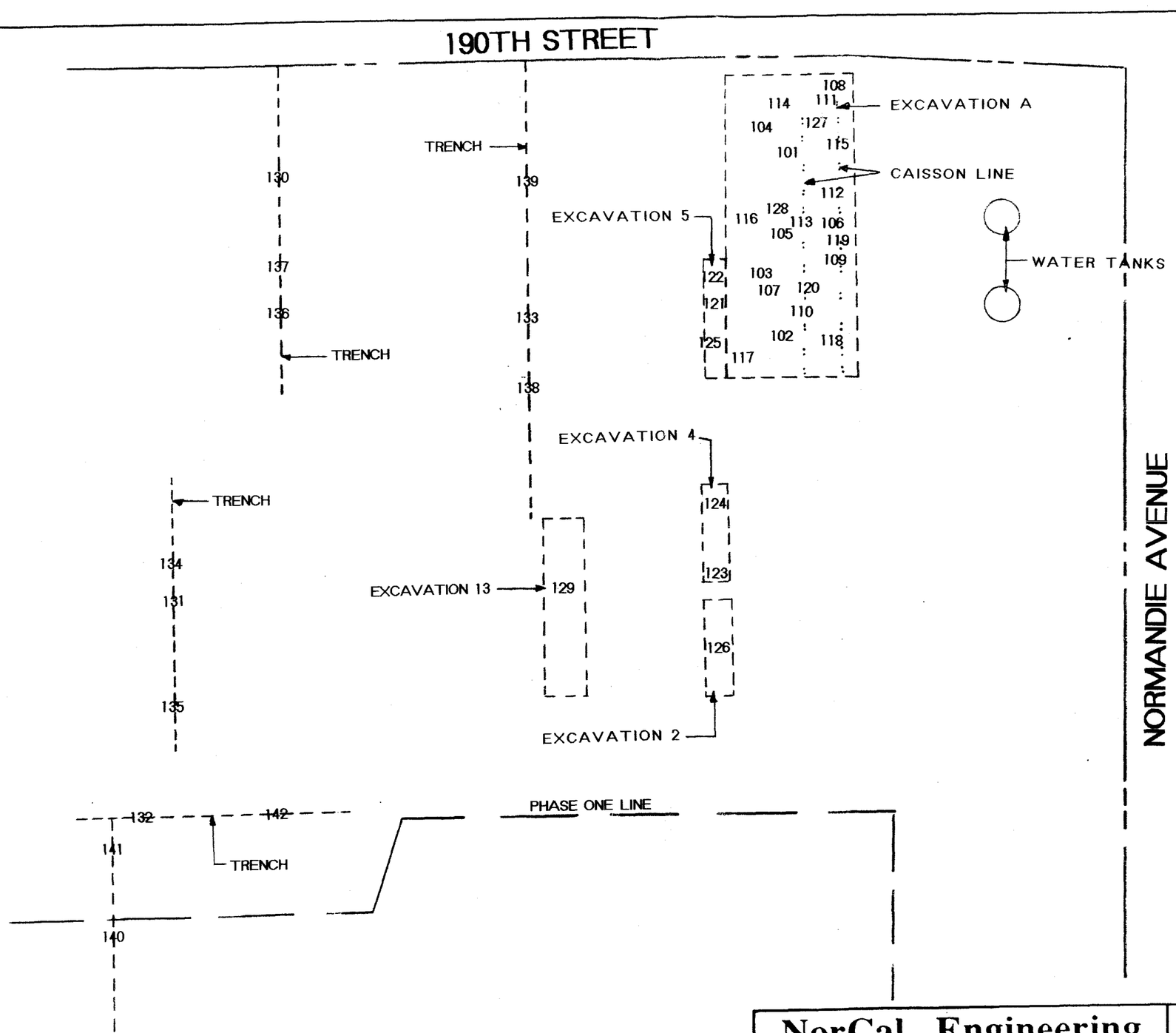
**Retest of failing tests after area reworked

TABLE II
COMPACTION TEST RESULTS

Date of Test	Test No.	Depth*	Percent Moisture	Unit Wt. lbs./cu.ft.	Relative Compaction	Soil Type
6/27/97	133	3.0-3.5	10.2	114.3	94	III
6/27/97	134	1.0-1.5	13.5	121.3	95	IV
6/27/97	135	0-0.5	11.1	124.8	97	IV
6/27/97	136	1.0-1.5	12.3	117.8	92	IV
6/27/97	137	0-0.5	12.1	121.3	95	IV
6/30/97	138	0-0.5	11.0	112.6	93	III
6/30/97	139	1.0-1.5	14.0	113.1	93	III
6/30/97	140	1.0-1.5	11.4	115.2	95	III
6/30/97	141	0-0.5	12.1	111.5	92	III
6/30/97	142	0-0.5	10.2	109.8	90	III

* Depth below finish grade (in feet)

**Retest of failing tests after area reworked



NOTE: SLAB LEFT IN PLACE AT BOTTOM OF EXCAVATIONS 2, 4, 5 AND 13 (4-5 FEET BELOW EXISTING GRADES)

NorCal Engineering
SOILS AND GEOTECHNICAL CONSULTANTS

MCDONNELL-DOUGLAS

PROJECT 5936-96 | DATE JULY 1997

SITE PLAN WITH COMPACTION TEST LOCATIONS

NorCal Engineering

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10641 Humbolt Street Los Alamitos, CA 90720
(562)799-9469 FAX (562)799-9459

CITY OF LOS ANGELES

DEPARTMENT OF BUILDING AND SAFETY

ENGINEER'S CERTIFICATE OF COMPLIANCE FOR COMPACTED EARTH FILLS

JOB/LEGAL ADDRESS: Southwest Corner of 190th Street and Normandie Avenue, in The City of Los Angeles, California

SOIL TESTING AGENCY: NorCal Engineering

PROPERTY OWNER'S NAME: Mc Donnell Douglas Realty Company

OWNER'S ADDRESS:4060 Lakewood Boulevard Lakewood, California

PER REPORTS ON OUR PROJECT NUMBER: 5936-96

DATE OF WORK STARTED ON PROJECT: 5/21/97

DATE FILL WAS COMPLETED: 6/30/97

DATE OF THIS CERTIFICATE:7/10/97

TO THE SUPERINTENDENT OF BUILDING:

I hereby certify that I have personally inspected and tested the placing of compacted earth fill on the above described property, and on the basis of these inspections and tests it is my opinion that the same was placed in conformity with the requirements of the Los Angeles City Building Code.

Keith D. Tucker
R.G.E. 841

*For the purpose of this certificate, to have "personally inspected and tested" shall include inspection and testing performed by any person responsible to the licensed engineer signing this certificate. Where the inspection and testing of all or part of the work above is delegated, full responsibility shall be assumed by the licensed engineer whose signature is affixed thereon.